

Amendments to the Specification:

Please replace the paragraph beginning on line 5 of page 1 with the following amended paragraph:

This application is a continuation-in-part application of application serial no. 10/074310, which issued as United States Patent No. 6,710,677 and which is assigned to Nortel Networks Limited.

Please replace the paragraphs beginning on line 25 of page 9 and ending on line 22 of page 10 with the following amended paragraphs:

Figure ~~21A~~ 20A shows a SAW band reject filter using 1 conventional SAW resonator in parallel;

Figure ~~21B~~ 20B shows a narrow reject band SAW filter using a SAW resonator having non-parallel fingers in parallel in accordance with the invention;

Figure ~~21C~~ 20C shows a wide reject band SAW filter using a SAW resonator having non-parallel fingers in parallel in accordance with the invention;

Figure ~~22~~ 21 shows an S21 simulated plot of the rejection characteristics of the band reject filters of ~~21A, 21B and 21C~~ 20A, 20B and 20C;

Figure ~~23~~ 22 is a schematic circuit diagram of two series non-parallel resonators in parallel with an inductance;

Figure ~~24~~ 23 is a plot showing insertion loss for the circuit of Figure ~~23~~ 22;

Figure ~~25~~ 24 is a schematic circuit diagram of two shunt non-parallel resonators in parallel with an inductance;

Figure ~~26~~ 25 is a plot showing insertion loss for the circuit of Figure ~~25~~ 24;

Figure ~~27A~~ 26A shows an array of non-parallel resonators;

Figure ~~27B~~ 26B shows the array of Figure 8 generalised further and also including resonators having non-parallel resonator fingers;

Figure ~~28~~ 27 shows a hybrid array of conventional and non-parallel resonators;

Figure ~~29A~~ 28A shows a layout and corresponding circuit schematic symbol for a convention resonator; and

Figure ~~29B~~ 28B shows a layout and corresponding circuit schematic symbol for a non-parallel resonator.

Please replace the paragraph beginning on line 26 of page 12 with the following amended paragraph:

Figure 4 shows a mobile telephone handset ~~40~~ 400 which incorporates a duplexer which is similar in operation to the duplexer 22 of Figure 3. The purpose of the duplexer is to allow simultaneous transmission and reception in different frequency bands using the same antenna whilst ensuring that relatively high power transmit signals do not swamp the received signals which are to be amplified by the low noise amplifier. As noted above, SAW filters conventionally cannot be used for mobile handset applications in the 1800 MHz or above bands because the combination of high power and relatively high frequency rapidly destroys the filter electrodes. Thus in practice, such duplexers are presently built from ceramic filters. However, since the resonant modes of the filter of the present invention are in the receive band (when used in the transmit circuit segment) the high powers do not damage the filter.

Please replace the paragraph beginning on line 1 of page 13 with the following amended paragraph:

Thus, both in the base station of Figure 3 and the mobile handset 400 of Figure 4, it is possible to use a SAW filter in the transmit circuit.

Please replace the paragraph beginning on line 17 of page 13 with the following amended paragraph:

With reference to Figure 8, the power handling capability of this filter may be increased using arrays of SAW ~~filters~~ resonators 40 and 42. Each array consists of a plurality of series and parallel ~~filters~~ resonators (in the example shown a square array is used comprising nine ~~filters~~ resonators arranged in a 3 x 3 grid). Assuming that parasitic capacitances are adequately controlled, and assuming that each of the ~~filters~~ resonators in each array is identical, the frequency characteristic of the configuration of Figure 8 is identical to that of a single series and shunt resonator. However, since the voltages and currents across and through each resonator are divided by virtue of the series and parallel configurations respectively, the overall power handling capability is greatly increased. Thus, for example, using a 3 x 3 array of resonators as shown, the power handling capability is increased by a factor of 9. This may allow the band reject filter to be used at the power amplifier output of a low power (e.g. 5 watt) micro base station, for example. This configuration may be replicated with more than two arrays.

Please replace the paragraphs beginning on line 33 of page 15 and ending on line 8 of page 16 with the following amended paragraphs:

As a yet further enhancement, any of the resonators described above may be replaced with a resonator having non-parallel fingers as shown in figure ~~21B~~ 20B and ~~21C~~ 20C.

Figure ~~21A~~ 20A shows a conventional SAW resonator for comparison purposes. This non-parallel finger type SAW resonator is particularly advantageous when a relatively wide reject band is desired.

In the schematic diagrams appended hereto, a non-parallel SAW resonator is shown using the symbol given in Figure ~~29B~~ 28B. The conventional resonator symbol (and a conventional

SAW implementation thereof) is given in Figure ~~29A~~ 28A for comparison purposes.

Please replace the paragraphs beginning on line 14 of page 16 and ending on line 23 of page 17 with the following amended paragraphs:

Figure ~~22~~ 21 shows an S21 simulation of the insertion loss of the three filters of Figure ~~21A, 21B and 21C~~ 20A, 20B and 20C in a shunt configuration. Respectively, Figure ~~21A~~ 20A provides a deep and narrow reject band 60, the filter of Figure ~~21B~~ 20B provides a wider and less deep notch 62 and the wideband configuration of Figure ~~21C~~ 20C provides a wider and less deep reject characteristic 64.

The filters of Figures ~~21B~~ 20B and ~~21C~~ 20C provide a good flexibility since a lower number of this type resonators is required to achieve a desired wide reject band response. A plurality of the filters may be used together in parallel (Fig. ~~25~~ 24 and ~~26~~ 25) to provide a wide reject band. To achieve the same characteristic using conventional resonators would require a large number of resonators and therefore a large substrate area. Thus the use of the non-parallel type resonator shown in Figure ~~21B~~ 20B or ~~21C~~ 20C may be used to replace all or part of an array of the type shown in Figure 8 in order to provide a desired band reject characteristic. It will be appreciated that the fingers 66 of the filters of the resonators shown in Figures ~~21B~~ 20B and ~~21C~~ 20C need not be straight but could for example have a curving or exponential characteristic. The essential characteristic of these filters is that the spacing between the fingers varies through the filter. Generally, the greater the variation, the wider the rejection band.

Figure ~~23~~ 22 is a schematic diagram which demonstrates the characteristic obtained from two non-parallel resonators R1 in series with a matching inductor L. The plot of Figure ~~24~~ 23 shows the rejection performance of a single one of the resonators R1 and also the rejection performance of the total circuit Rt. It will be noted that by connecting the resonators in series (with a matching inductance) the overall performance produces a steeper transition band but with worse rejection performance than a filter using single resonator R1.

Similarly, Figure ~~25~~ 24 shows a schematic diagram of two non-parallel resonators R1 and

R3 each having a rejection band generally adjacent in the frequency spectrum and also a matching inductance L. The plot of Figure 26 25 shows the rejection performance of the filter using single resonator R1 (the rejection performance of R3 is very similar but shifted slightly higher in frequency) and the plot Rt shows the total performance of the circuit including the matching inductance. It will be noted that this arrangement provides a wider reject band with little performance penalty in terms of transition steepness.

Thus it will be seen that with these building blocks of series and parallel inductors, a rejection notch of a desired width and transition steepness may be chosen. It will be particularly noted that the configuration shown in Figure 25 24 provides a wider notch easily. This particular configuration may be expanded in the way shown for example in Figure 27A 26A and Figure 27B 26B. Furthermore, Figure 28 27 shows that hybrid structures may be used using conventional resonators which may be FBAR or SAW resonators in conjunction with non-parallel SAW resonators. This provides considerable flexibility in designing band reject filters of the type described above and allows filters to be made to perform in ways that have hitherto not been possible in terms of frequency performance and loss performance.